REMARKS

Claims 1-13 and 22 are submitted for reconsideration without amendment in light of the following remarks and authorities and those previously presented.

The office action states:

> Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention.
>
> Claim 1 establishes the limitation "…so that the combined radiation into free air from said first radiating surface and said open end is free from ***appreciable reduction*** in radiation at said dip frequency" (emphasis added). The term "appreciable reduction" is not defined in the specification. "Appreciable reduction" in radiation at said dip frequency radiated into free air from said first radiating surface and said open end is entirely subjective and may vary from one user to another as what is thought to be "appreciable reduction". Since this term is not quantified or defined in the specification the Office is unable to ascertain the bounds of "appreciable reduction."

This ground of rejection is respectfully traversed. The specification explains the mode of operation whereby the null at the dip frequency is greatly reduced. The specification explains:

> Referring now to FIG.2, there is shown an electroacoustical waveguide system 10 according to the invention. Waveguide system 10 includes an acoustic waveguide 11 that is a tubular structure that has a terminal end 12' and an open end 14. An "acoustic waveguide" as used herein, is similar to the tube or low loss acoustic transmission line disclosed in U.S. Patent No. 4,628,528 or in the Bose Wave radio/CD. Terminal end 12 is terminated by an acoustically reflective surface. Mounted in a wall 22 of waveguide 11 is an acoustic energy source, in this case, an acoustic driver 16. Acoustic driver 16 has one radiating surface (in this case back side 18) of the acoustic driver facing free air and the other side (in this case front side 20) of the acoustic driver facing into acoustic waveguide 11. Acoustic driver 16 is mounted at a point such that the reflected sound wave in the waveguide is out of phase with the unreflected radiation in the waveguide from the acoustic driver and therefore the unreflected and reflected radiation oppose each other. As a result of the opposition, there is significantly reduced radiation from acoustic waveguide 11. Since there is significantly reduced radiation from the acoustic waveguide 11, the sound waves radiated into free air by the back side 16 of the acoustic driver 16 are not opposed by radiation from waveguide 11, and the null at the dip frequency *f* at which the wavelength equal L (and at the even multiples of frequency f) is greatly reduced. In a waveguide of substantially constant cross section, if acoustic driver 16 is placed at a point .25L, where L is

the effective length of the waveguide including end effects, from the terminal end 12 of the waveguide, the reflected sound wave is out of phase with the unreflected radiation from the acoustic driver at the dip frequency. P. 3, l. 19 - P. 4, l. 7.

In *Andrew Corp. v. Gabriel Elec., Inc.*, 847 F.2d 819, 821 (Fed. Cir. 1988) the court said:

> The district court held the Knop patent claims invalid, stating that terms in the claims such as "approach each other", "close to", "substantially equal", and "closely approximate", with reference to the E-plane and H-plane RPEs, were too vague to satisfy the requirement of definiteness stated in 35 U.S.C. §112.
>
> . . .
>
> The criticized words are ubiquitous in patent claims. Such usages, when serving reasonably to describe the claimed subject matter to those of skill in the field of the invention, and to distinguish the claimed subject matter from the prior art, have been accepted in patent examination and upheld by the courts.

Manifestly, this usage of appreciable reduction serves reasonably to describe the claimed subject matter to those of skill in the field of the invention and to distinguish the claimed subject matter from the prior art. Accordingly, withdrawal of the rejection of claim 1 as indefinite is respectfully requested.

The office action continues:

> Claims are rejected under 35 U.S.C. 102(b) being anticipated by Bose et al. ("Bose") (US Patent 4,628,528).
>
> Regarding claim 1, Bose discloses an acoustic waveguide having an open end and an interior (Fig. 8, opening 42); a first acoustic driver connected to said acoustic waveguide having a first radiating surface and a second radiating surface (drivers 41 radiating into air and waveguide), constructed and arranged so that said first radiating surface radiates sound waves into free air and said second radiating surface radiates sound waves into said acoustic waveguide so that sound waves are radiated at said open end (42) into free air that would ordinarily oppose the radiation from said first surface at a dip frequency (Fig 7, dip frequency); and a source of opposing sound waves in said acoustic waveguide for opposing a predetermined spectral component corresponding to said dip frequency of said sound waves radiated into said acoustic waveguide to oppose the acoustic radiation of said predetermined spectral component from said acoustic waveguide (drivers 41) so that the combined radiation into free air from said first radiating surface and said open end is free from appreciable reduction in radiation at said

dip frequency (The term appreciable is not defined in the specification and therefore reads on Bose).

Regarding claim 2, Bose further discloses an acoustic port coupling said interior with free air (42).

Regarding claim 5, Bose further discloses said source or opposing sound waves comprises a second acoustic driver arranged and constructed to radiate sound waves into said acoustic waveguide (drivers 41).

Regarding Claim 6, Bose further discloses an acoustic port, coupling said interior with free air (42).

Regarding Claim 8, Bose further discloses a predetermined spectral component comprise a dip frequency at which said waveguide system produces an acoustic null, absent said source of opposing sound waves(Fig. 7).

Regarding Claim 10, Bose further discloses said source or opposing sound waves comprises a second acoustic driver arranged and constructed to radiate sound waves into said acoustic waveguide (drivers 41).

Regarding Claim 11, Bose discloses an acoustic waveguide (Fig. 8) having an open end (42) and a closed end (drivers 41) and further having an effective length; an acoustic driver having a first radiating surface constructed and arranged to radiate sound waves into free air and a second radiating surface for radiating sound waves into said waveguide so that sound waves are radiated at said open end into free air that would ordinarily oppose the radiation from said first surface at a dip frequency (Driver 41 and Fig. 7), a source of opposing sound waves (driver 41) position in said acoustic waveguide so that there is an acoustic null at said open end at said dip frequency so that the combined radiation into free air from said first radiating surface and said open end is free from appreciable reduction in radiation at said dip frequency (The term appreciable is not defined in the specification and therefore reads on Bose). Pp. 3-5.

This ground of rejection is respectfully traversed. We rely on the authority set forth on pages 9-10 of the response transmitted June 2, 2004.

In order to support a rejection under section 102, the reference must disclose each and every limitation in the rejected claims arranged as in a rejected claim. The reference does not disclose a source of opposing sound waves in the acoustic waveguide for opposing a predetermined spectral component corresponding to the dip frequency of sound waves radiated into the acoustic waveguide to oppose the acoustic radiation of the predetermined spectral component from the acoustic waveguide so that the combined radiation into free air from the first radiating surface and the open end is free from appreciable reduction in radiation at the dip

frequency. All the claims 1-13 include this limitation. Accordingly, the reference does not anticipate these claims, and withdrawal of the rejection of them is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the reference corresponding to the source of opposing sound waves positioned in the acoustic waveguide so that there an acoustic null at the open end at the dip frequency so that the combined radiation into free air from the first radiating surface and the open end is free from appreciable reduction in radiation at the dip frequency.

The office action states:

> Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bose as applied to claim 6 above in view of Edgar (US Patent 5,588,063).
>
> Bose discloses a system as stated apropos of claim 6 above including a closed end (left end of waveguide). Bose does not disclose an acoustic port positioned between said first acoustic drive and said closed end of said acoustic waveguide. Edgar discloses a waveguide system including acoustic ports (Fig. 4, posts 52) in order to improve the directionality of the speaker system (Col. 5, lines 60-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include acoustic ports to improve the directionality of the speaker system as taught by Edgar. P. 5.

This ground of rejection is respectfully traversed. We rely on the authorities set forth on pages 11 and 12 of the response transmitted March 13, 2006.

Claim 7 is dependent upon and includes all of the limitations of claim 1. Since claim 1 is not anticipated by the primary reference for reasons set forth above, it is impossible to combine the primary and secondary references to meet the limitations of claim 7. That it is impossible to combine references to meet the limitations of claim 7 is reason enough for withdrawing the rejection of it. Accordingly, withdrawal of the rejection of claim 7 as unpatentable over the primary and secondary references is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the references regarded as corresponding to at least the limitation set forth above as absent from the primary reference and the language in the references regarded as suggesting the desirability of combining what is disclosed there to meet the limitations of claim 7.

In view of the authorities identified above and the inability of the prior art to anticipate, suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, all the claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested. If the Examiner believes the application is not in a condition for allowance, he is respectfully requested to telephone the undersigned attorney at 617-521-7014 to discuss what additional steps he believes are necessary to place the application in a condition for allowance.

Respectfully submitted,
FISH & RICHARDSON, PC

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